Asian Herpetological Research 2012, 3(2): 147–150
DOI: 10.3724/SP.J.1245.2012.00147

# First Record of *Sphenomorphus incognitus* (Thompson, 1912) (Squamata: Scincidae) from Vietnam with Some Notes on Natural History

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**Abstract** S*phenomorphus incognitus* is recorded for the first time outside of China. The new locality record is from the Tay Yen Tu Nature Reserve in Bac Giang Province, northeastern Vietnam at elevations between 200–450 m. Based on the newly collected specimens, we present an expanded description and provide data on the natural history of this species in northern Vietnam.

**Keywords** new record, *Sphenomorphus incognitus*, Tay Yen Tu Nature Reserve, Bac Giang Province, Vietnam

## 1. Introduction

*Sphenomorphus incognitus* was described by Thompson (1912) from Koshun, Formosa (now Hengchun, Taiwan, China) and it has long been known under the name *S. boulengeri* (Smith, 1935; Yu, 1970; Zhao and Adler, 1993). This species is currently known only from China, including Taiwan, Hong Kong and Hainan (Yu, 1970; Zhao and Adler, 1993; Lau, 2005). Morphologically, *S. incognitus* is most similar to *S. indicus*, a widely distributed species from South Asia to Indochina and northward to south and central China (Lau, 2005). However, *S. incognitus* can be diagnosed from the latter by the presence of a patch of enlarged scales at the back of the thigh and the absence of a light dorsolateral stripe on the neck and shoulder (Lau, 2005; Nguyen *et al*., 2011). During recent field research in northern Vietnam, a remarkable *Sphenomorphus* that was not assignable to any of the Vietnamese species known so far was collected in Bac Giang Province. Closer examination revealed it to be *S. incognitus* and we thus herein report on a new country record for this species from Vietnam.

## 2. Material and Methods

Field surveys were undertaken within the Tay Yen Tu Nature Reserve in Bac Giang Province, northeastern Vietnam by T. Q. Nguyen and S. V. Nguyen in August 2001, by T. T. Tran in May 2006, by T. Q. Nguyen in April 2008, and by T. Ziegler and T. T. Nguyen in October 2009 (Figure 1). Specimens referred to in this paper are deposited in the collections of the Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam; the Vinh Phuc College of Education (TYT), Phuc Yen, Vinh Phuc Province, Vietnam; and the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK), Bonn, Germany.

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Received: 16 February 2012 Accepted: 28 April 2012

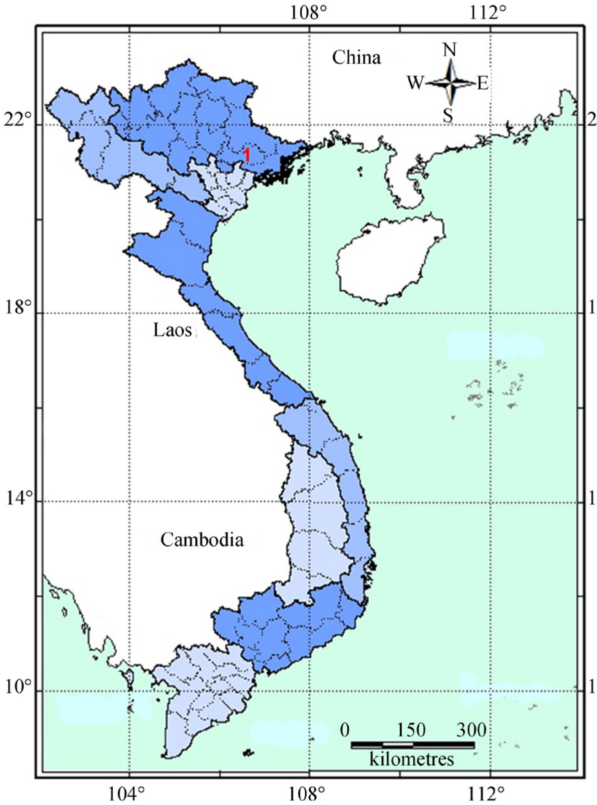

**Figure 1** Map showing the collecting location of *S. incognitus* within Bac Giang Province (1), northeastern Vietnam.

**Specimens examined:** TYT 62, 150 (subadults), TYT 644, 675–676 (adult females), from Thanh Son Commune, Son Dong District, Bac Giang Province, collected by T. T. Tran in May 2006; IEBR A.0823 (adult male), IEBR A.0825–A.0826 (subadults) collected by T. Q. Nguyen and S. V. Nguyen in August 2001; IEBR 3637 (a subadult female), IEBR 3687–3688 (adult females) collected by T. Q. Nguyen between 9 and 13 April 2008, from the Tay Yen Tu Nature Reserve, Son Dong District, Bac Giang Province (21°09.773'N, 106°49.296'N), 450 m; ZFMK 92834 (a subadult) from the Tay Yen Tu Nature Reserve, Son Dong District, Bac Giang Province, 400 m, collected by T. Ziegler and T. T. Nguyen in October 2009. **Specimen compared:** ZFMK 61733 from Wuzhishan, Hainan, China, 700 m, collected by Peter Heimes in April 1995.

Measurements were taken with a dial calliper to the nearest 0.1 mm. The following abbreviations are used: SVL: snout-vent length (from tip of snout to anterior margin of vent); TaL: tail length (from posterior margin of vent to tip of tail); HL: head length (from tip of snout to posterior margin of the parietal); HW: head width (widest distance between the temporal regions). Scalation: paravertebral scales (number of scales in a line from posterior edge of parietals to dorsal point opposite posterior margin of medial precloacals); and ventral scale rows (number of scales from first gular to anterior margin of precloacals).

## 3. Results

**3.1 Description of *Sphenomorphus incognitus* from Vietnam** Large-sized *Sphenomorphus*, females: SVL 89.0–103.0 mm (mean ± SD 94.4 ± 5.2 mm, n = 5), TaL 148.3–157.5 mm (n = 2); males: SVL 79.6–103.9 mm (n = 2), TaL 141.0 mm (n = 1); head longer than wide, snout obtuse, rounded anteriorly; rostral wider than high, distinctly visible from above; supranasals absent; frontonasal wider than long, in contact with rostral, nasals, anterior loreals, prefrontals, and frontal; prefrontals separated; frontal narrowing posteriorly, in contact with frontonasal, prefrontals, 2–3 supraoculars, and frontoparietals; frontoparietals in contact anteriorly, and bordered by frontal, 2–3 posterior supraoculars, parietals and interparietal; interparietal in lozenge-shape with a small transparent spot in posterior angle; parietals in contact posteriorly, posterolateral border surrounded by 4–6 scales on each side; nuchal scales absent or in one pair; nostril in centre of nasal; postnasals absent; loreals 2, anterior higher but narrower than posterior, posterior loreal in contact with anterior loreal, prefrontal, anterior supraciliary, preoculars, the second and third supralabials; preoculars 2, with the lower one enlarged; presuboculars 2, posterior scale in contact with the fourth and fifth supralabials; supraciliaries 9–11, the first largest; supraoculars 4, the second widest, the fourth supraocular followed by a small postsupraocular; postoculars 2; postsuboculars 4–5, the lower one in contact with the sixth supralabial; primary temporals 2; secondary temporals 2, the upper one very large, overlapped by the lower one, and in contact with parietal; lower eyelid moveable, scaly, separated from supralabials by one row of small scales; supralabials 7, the fifth below eye; external ear opening oval, half the size of eye length, without lobules; tympanum deeply sunk; mental wider than long, rounded anteriorly, in contact with the first infralabial on each side and postmental; infralabials 6–7, the first very small; postmental undivided, in contact with mental, the first and second infralabials, and anterior pair of chinshields; 3 pairs of chinshields, anterior pair in contact with each other anteriorly, the second pair separated from each other by a gular scale, and posterior pair separated from each other by three scales.

Midbody scales in 38 rows in all specimens from northern Vietnam and Hainan, China; dorsal scales smooth, 8–½ + 8 + ½ scale rows between dark stripes on upper lateral zones; paravertebral scales 67−80, not widened; ventrals smooth, in 73−84 rows; precloacals 4, inner scales overlapping outer ones, medial two enlarged, right one overlapped by left one; tail thick at base, medial subcaudals slightly widened.

Limbs well developed, pentadactyl, tip of the longest toe (IV) reaching to wrist or elbow when adpressed; scales on dorsal surface of basal digit IV in three rows, reducing to two at position of about 1/2–2/3 of digit length, and with terminal 1–2 scales single; subdigital lamellae smooth, 12–15 under finger IV and 18−24 under toe IV. A patch of enlarged scales present at the back of the thigh.

For coloration in preservative free margins of upper and lower eyelids edged in white; dorsum and tail base grayish brown or brown with irregular black dots; dorsolateral area with white spots, more distinct on neck and shoulder; upper lateral zone with a black stripe, not clearly defined, in width of 3–4 scales, from behind eye to tail base, interrupted by light spots; lower lateral zone light gray with dark marbling or spots; chin, throat, venter, and under tail cream, immaculate. For coloration in life see Figure 2.

**3.2 Natural history** In Vietnam, *S. incognitus* inhabits mixed forest of hardwood, bamboo, and shrub, at elevations between 200–450 m (Figure 3). The specimens were found both on the forest floor and in streams. It is a semi-aquatic species and a well swimming skink. Stomach contents of seven specimens contained: remains of two spiders (Araneae) and a termite (Isoptera) in IEBR A.0823; remains of a cockroach (Blattodea) and a termite (Isoptera) in TYT 644; remains of a cockroach, a spider, and two crickets (Saltatoria) in TYT 675; remains of a spider in IEBR 3637; some squamate scales were found in IEBR 3687; and the stomachs were empty in IEBR 3688 and TYT 676 (Figure 4). The males had white testes (6.9–7.1 mm in length, 2.8–4.3 mm in width). The female, TYT 644, contained seven white shelled-eggs (15.1 mm in length and 8.5 mm in diameter) and other females had small yellow follicles (4.2–4.5 mm in diameter).

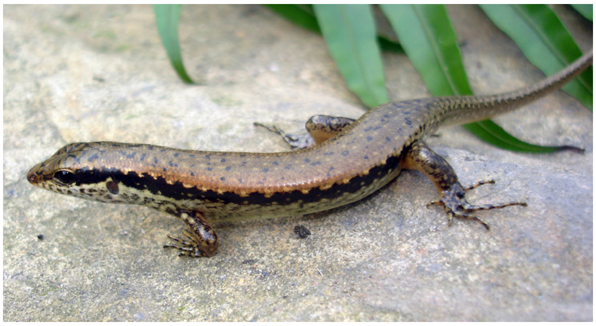

**Figure 2** *Sphenomorphus incognitus* (IEBR 3637, adult female) in life from the Tay Yen Tu Nature Reserve, Bac Giang Province, Vietnam.

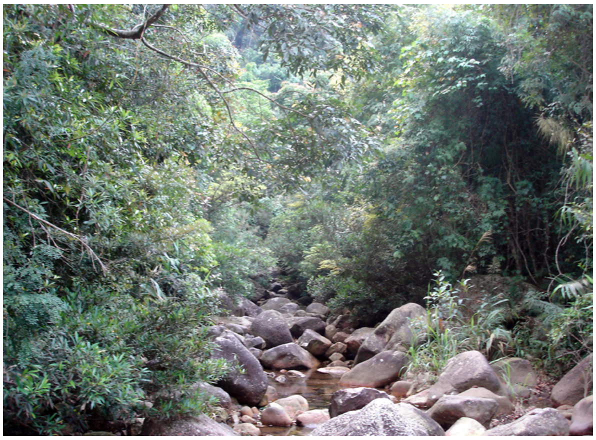

**Figure 3** Habitat of *S. incognitus* in the Tay Yen Tu Nature Reserve, Bac Giang Province, Vietnam.

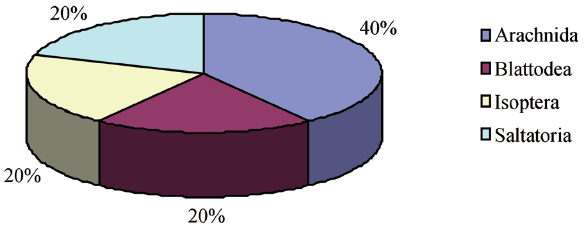

**Figure 4** Percentage of prey items in the stomachs of *S. incognitus* (n = 7).

## 4. Discussion

The genus *Sphenomorphus* is a diverse, paraphyletic group of the family Scincidae with a total of 122 recognized species (Nguyen *et al*., 2011; Uetz, 2012). However, many species of *Sphenomorphus* and *Scincella* are morphologically very similar, and these similarities contribute to the ongoing confusion about the taxonomic identity and geographic distribution of these species (Nguyen *et al*., 2011). Based on the generic diagnosis of *Scincella* (Greer, 1974) and the examination of the type series from Tay Nguyen Plateau in central Vietnam, Nguyen *et al*. (2011) clarified that the transfer of *rufocaudatus* from *Sphenomorphus* to the genus *Scincella* is due to its lower eyelid showing an opaque window and upper secondary temporal overlapped by lower scale. In the review of the genus *Sphenomorphus* from Vietnam, Nguyen *et al*. (2011) also removed *devorator* from *Sphenomorphus* to *Scincella* as well as transferred *tetradactylus* from *Leptoseps* and *bacboensis* from

*Livorimica* into *Sphenomorphus*. In addition, these authors recently reported the record of *S. mimicus* from Vietnam and described another new species from northern Vietnam and southern China, namely, *S. tonkinensis*. Therefore, the following twelve species of *Sphenomorphus* are currently recognized from Vietnam: *S. bacboensis*, *S. buenloicus*, *S. cryptotis*, *S. incognitus*, *S. indicus*, *S. maculatus*, *S. mimicus*, *S. stellatus*, *S. tetradactylus, S. tonkinensis*, *S. tridigitus*, and *S. tritaeniatus* (Nguyen *et al.*, 2009; Nguyen *et al.*, 2011). Among the aforementioned species, *S. incognitus* inhabits lowland evergreen forests at elevations between 200–450 m. This species is known to be closely associated with water. The dominant edibles of *S. incognitus* are spiders (Arachnida) with 40% of its prey items.

**Acknowledgements** We are grateful to S. V. Nguyen and C. T. Pham (Hanoi) for their assistance in the field. We thank the directorate of the Tay Yen Tu Nature Reserve and Forest Protection Department of Bac Giang Province for issuing relevant permits for collection of specimens. For the loan of specimens, we acknowledge C. X. Le (Hanoi). T. Q. Nguyen thanks M. Bonkowski (Cologne) for support of the work in Germany. Field work in Vietnam was partially funded by IEBR (Vietnam), the Nagao Natural Environment Foundation (Japan), and the German Academic Exchange Service (DAAD). Research of T. Q. Nguyen in Germany is funded by the Alexander von Humboldt Foundation (VIE 1143441 STP).

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